

AMENDMENTS TO THE DRAWINGS

Applicants enclose herewith replacement sheets to replace FIGS. 3, 7, 8, 9, 10, 12, and 15 of the drawings.

Attachment: Six (6) Replacement Sheets

REMARKS

Claims 22-48 are all the claims pending in the application. By this Amendment, Applicants amend the claims to better conform them to U.S. patent practice. Applicants submit, however, that the scope of the claims has not been narrowed, and thus, no estoppel is created in the application of the doctrine of equivalents. New claims 45-48 have been added.

Drawings Objection

The drawings are objected to due to various informalities. The informalities noted by the Examiner have been corrected, as shown on the replacement drawing sheets being submitted concurrently herewith. Therefore, withdrawal of this drawings objection is respectfully requested.

Specification

The disclosure is objected to due to a minor informality. In view of the amendment to the Specification being made herein, Applicants respectfully request withdrawal of this objection.

Claim Rejections - 35 U.S.C. § 112

Claims 30 and 31 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. In view of the clarifying amendments to claims 30 and 31, Applicants respectfully submit that the claims comply with the requirements of 35 U.S.C. § 112.

Claim Rejections - 35 U.S.C. § 102

Claims 22-26, 28, 30-33, 38-39, and 41-44 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,175,550 to van Nee. For *at least* the following reasons, Applicants respectfully traverse the rejection.

Applicants respectfully submit that claim 22 is not anticipated by van Nee. For example, claim 22 relates to a radio communications device. The radio communications device comprises, *inter alia*, a transmitter, a receiver, propagation detecting means, and symbol rate setting means. The transmitter comprises, *inter alia*, a plurality of transmission antennas, a plurality of transmitting circuit means, and transmission signal processing means. The receiver comprises, *inter alia*, a plurality of reception antennas, a plurality of receiving circuit means, and reception signal processing means.

The plurality of transmission antennas radiate radio waves based on transmission RF signals, and the plurality of transmitting circuit means supply the transmission RF signals to said plurality of the transmission antennas, respectively, based on a plurality of transmission signals. The transmission signal processing means, which comprises modulating means, modulates input transmission data to generate said plurality of the transmission signals by using said modulating means, and outputs the modulated plurality of the transmission signals to said plurality of the transmitting circuit means. The plurality of reception antennas receive the radio waves transmitted by the plurality of the transmission antennas and output reception RF signals based on the received radio waves, and the plurality of receiving circuit means output reception signals based on said reception RF signals output respectively by said plurality of the reception antennas. The reception signal processing means, which comprises demodulating means, demodulates the reception signals output respectively from said plurality of the receiving circuit means by using said demodulating means to generate reception data.

The propagation detecting means detects a propagating state of said radio waves received by said plurality of the reception antennas. The symbol rate setting means selects a symbol rate, to be used during modulation and demodulation, from a plurality of symbol rates based on the

detected propagating state. Further, the symbol rate setting means sets the selected symbol rate in said modulating means and said demodulating means.

In the Office Action, it is alleged that in van Nee, the OFDM transmitter 11 in FIG. 1, and the OFDM receiver in FIG. 4 disclose the claimed transmitter and receiver. The level detector 40 in FIG. 1 allegedly discloses the claimed propagation detecting means. Moreover, it is alleged that the dynamic rate control part 47 (also referred to as the dynamic control circuitry 47 in van Nee), along with col. 1, lines 37-61 disclose the claimed symbol rate setting means in as complete detail as set forth in the claim. Applicants respectfully disagree.

Applicants respectfully submit that van Nee does not disclose the claimed symbol rate setting means. For instance, although van Nee discloses scaling the OFDM symbol duration, it is not based on a propagating state of received radio waves. Rather, it is based on the communication environment that van Nee's scaleable OFDM system is operating in (van Nee, col. 1, lines 53-61 and col. 2, lines 52-60). A propagating state of the received radio waves is not taken into account in van Nee's control circuitry which scales the OFDM symbol duration.

In particular, van Nee discloses that "the scaleable OFDM system can dynamically adjust the symbol duration, coding rate, the number of bits per symbol per carrier and/or the number of carriers depending upon the required or desired operating parameters and/or characteristics" (van Nee, col. 3, lines 23-28, emphasis added). Dynamically adjusting the symbol duration depending upon the required or desired operating parameters does not disclose or suggest selecting a symbol rate based on a propagating state of radio waves received by a plurality of the reception antennas as set forth in claim 1. Therefore, van Nee cannot anticipate claim 22.

Claims 23 and 41-44 recite features similar to those discussed above with respect to claim 22. Therefore, claims 23 and 41-44 are patentable for *at least* reasons similar to those given above with respect to claim 22.

Claims 24-26, 28, 30-33, 38, and 39 are patentable *at least* by virtue of their dependency. In addition, claim 32 is patentable for reasons other than its dependency.

For example, claim 32 recites that said transmission signal processing means and said reception signal processing means reduce a number of said plurality of the transmitting circuit means to be used and the number of said plurality of the receiving circuit means to be used when said high symbol rate is set, and increase the number of said plurality of the transmitting circuit means to be used and the number of said plurality of the receiving circuit means to be used when said low symbol rate is set. It is alleged in the Office Action that van Nee, in col. 1, line 62 to col. 2, line 10, and col. 3, lines 34-58 discloses each and every one of the noted features of claim 32. Applicants respectfully disagree.

For example, although van Nee discloses that the number of carriers (which correspond to subcarriers in OFDM, and to 60a-60p in FIG. 3 of van Nee) can be changed, van Nee does not disclose or suggest that the actual number of transmitting circuits to be used and the number of receiving circuits to be used are changed, as required by claim 32. Therefore, Applicants respectfully submit that van Nee cannot anticipate claim 32.

Claim Rejections - 35 U.S.C. § 103

Claims 27, 29, and 34 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over van Nee in view of U.S. Patent No. 7,315,563 to Smith *et al.* ("Smith"). Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over van

Nee in view of U.S. Publication No. 2006/0141952 to Kung *et al.* ("Kung"). Claim 37 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over van Nee. Claim 40 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over van Nee in view of U.S. Publication No. 2006/0206552 to Borean *et al.* ("Borean").

Claims 27, 29, and 34 depend from claims 22 or 23. Since Smith does not cure the above-noted deficiencies of van Nee, claims 27, 29, and 34 are patentable *at least* by virtue of their dependency.

Claims 35 and 36 depend from claims 22 or 23. Since Kung does not cure the above-noted deficiencies of van Nee with respect to claims 22 and 23, claims 35 and 36 are patentable *at least* by virtue of their dependency. Moreover, claim 35 is patentable for reasons other than its dependency.

For example, claim 35 recites that said modulating means has modulation modes including a direct modulation mode for directly modulating said input transmission data into a transmission carrier and an indirect modulation mode for modulating said input transmission data into a transmission carrier after the input transmission data are processed, said demodulating means has demodulation modes including a direct demodulation mode for directly demodulating said reception signals to generate said reception data and an indirect demodulation mode for demodulating the reception signals and thereafter processing the demodulated reception signals to generate said reception data, said radio communications device further comprising modulation/demodulation mode selecting means for selecting and setting said modulation modes and said demodulation modes. The Examiner acknowledges that van Nee does not disclose all the features of claim 1. However, paragraphs [0027], [0040], and [0080] of Kung are cited for

allegedly teaching these features (Office Action, page 16, last paragraph). Applicants respectfully disagree.

For example, the cited portions of Kung merely relate to frequency conversion. However in Kung, “Direct modulation” is used to mean modulation in a “Direct conversion” mode and “pseudo-direct modulation” is used to mean modulation in “pseudo-direct conversion” (Kung, paragraph [0041], and [0082]). That is, these terms in Kung are used differently from their conventional meanings in the art. On the other hand, the present invention as set forth in claim 35 indicates that a scheme that directly modulates carriers is called a ‘direct modulation mode’, and a scheme that uses secondary modulation such as OFDM, e.g., is called ‘indirect modulation mode’. Therefore, the direct conversion and pseudo-direct conversion in Kung do not teach or suggest the claimed direct modulation and the claimed indirect modulation mode, which e.g., uses secondary modulation such as OFDM.

Claim 37 depends from claims 22 or 23. As noted above, van Nee does not anticipate claims 22 or 23. Therefore, claim 37 is patentable *at least* by virtue of its dependency.

Claim 40 depends from claim 22. Since Borean does not cure the above-noted deficiencies of van Nee with respect to claim 22, claim 40 is patentable *at least* by virtue of their dependency.

New Claims

New claims 45-48 are patentable *at least* by virtue of their dependency. Moreover, the prior art of record does not teach or suggest that the propagation detecting means receives as input a channel matrix based on the reception signals, a reception level of the reception signals, and a bit error rate of the reception signals, and detects the propagating state of the received radio waves based on the received input as set forth in claims 45-48.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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